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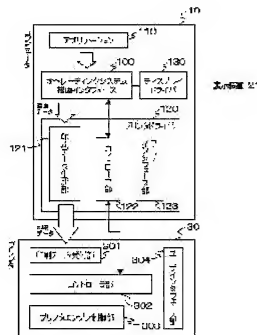
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(54) PRINTING SYSTEM, COMPUTER AND PRINTER

(57)Abstract:

PROBLEM TO BE SOLVED: To carry out printing
instructions from a printer at a printing system
constituted of the printer and a computer.

SOLUTION: When a printer driver 120 detects
depressing of a printing button provided on the printer
30, it demands sending of a depicting data related to a
printing object previously determined of 'full display', 'an
active window' and 'a document being processed' for an
operating system depicting interface 100. Printing data
are prepared based on the depicting data sent,
corresponding to this requirement and are outputted to
the printer 30 to execute the printing.

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CLAIMS

[Claim(s)]
[Claim 1]A computer which generates print data of a printing object.
A printer which prints based on generated print data.
Are the above the printing system which it had and said printer, It has an input means for
receiving printing directions from a user, and a means of communication which transmits to a
computer printing directions information which shows that said input means received printing
directions, Said computer is provided with a means of communication for receiving said
printing directions information, and a print data generation means which will generate print
data of a printing object if said printing directions information is received.

[Claim 2]A computer generating print data of a printing object and having a means of
communication for receiving printing directions information from a printer, and a print data
generation means which will generate print data of a printing object if said printing directions
information is received in a computer outputted to a printer.
[Claim 3]In the computer according to claim 2, equip a display screen of an image display
device connected with a means on which two or more sub screens are displayed hierarchical,
and said print data generation means, A computer choosing either of the documents currently
processed in the whole display screen, a sub screen of a front surface, and a sub screen of a
front surface as a printing object.
[Claim 4]A computer, wherein it has a means to receive selection of a printing object from a
user, in the computer according to claim 2 and said print data generation means determines a
printing object based on a user's selection.
[Claim 5]A computer having further a means to output a screen to which setting out of
information about printing is urged when specific information beforehand provided in printing
directions information which said means of communication receives in the computer according

to claim 2 is included.

[Claim 6]In a program which makes a computer perform processing changed into print data which receive drawing data and control a printer, Processing which judges whether a state of a printer was supervised and a printer received printing directions, A program making a computer perform processing which transmits a Request to Send of drawing data to other programs under operation by computer concerned if it judges that a printer received printing directions.

[Claim 7]A program characterized by a program besides the above being an operating system which controls the computer concerned in the program according to claim 6.

[Claim 8]In the program according to claim 7, said operating system, It is a thing which makes processing for which two or more sub screens are displayed on a display screen of an image display device connected to the computer concerned hierarchical perform to a computer, A program, wherein an object of drawing data concerning said Request to Send is determined out of a choice which includes the whole display screen and a sub screen of a front surface at least.

[Claim 9]A program, wherein an object of drawing data concerning said Request to Send is determined in the program according to claim 8 based on a user's selection.

[Claim 10]A recording medium which recorded the program according to any one of claims 6 to 9 and in which computer reading is possible.

[Claim 11]A printer comprising:

An input means for receiving printing directions from a user in a printer which prints based on print data transmitted from a computer.

A means of communication which transmits to a computer printing directions information which shows that said input means received printing directions.

[Claim 12]A printer characterized by said input means being a print button in the printer according to claim 11.

[Claim 13]A printer when pushed in the printer according to claim 12 more than time that said print button set beforehand, wherein said means of communication includes information to that effect in said printing directions information and transmits.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention relates to the printing system which comprises a printer
and a computer, and relates to the printing system which can perform printing directions from a
printer especially.
[0002]
[Description of the Prior Art]In the computer to which the printer was connected, the document
under processing can be printed by, for example, choosing "printing" from the menu prepared
for application. A printer can be made to print the whole screen currently displayed or the hard
copy of an active window by carrying out the depression of the predetermined key with an
operating system generally now.
[0003]
[Problem(s) to be Solved by the Invention]By the way, in any case, the printing directions from
a user carry out on a computer, and cannot be performed from a printer. For this reason, it is
inconvenient when the user who is near the printer tries to print. Since especially a printer uses
consumable goods, such as a paper and ink, in advance of printing execution, it moves to the
setting position of a printer from the service level of a computer, and many situations of
exchanging these consumable goods may also happen.In such a case, since it is not
necessary to return to a computer specially and and the product of printing can also be
acquired on that spot if printing directions can be performed from a printer, it is thought that the
operativity of a printing system improves more. When information required on the screen of a
computer is displayed, it is convenient if the information can be printed by easy operation on a
printer.
[0004]In the printing system which comprises a printer and a computer, the purpose of this
invention is enabling it to perform printing directions from a printer.

[0005]

[Means for Solving the Problem]In a printing system which is provided with a computer which generates print data of a printing object, and a printer which prints based on generated print data according to this invention in order to attain the above-mentioned purpose, An input means for said printer to receive printing directions from a user, Said input means is provided with a means of communication which transmits printing directions information which shows having received printing directions to a computer, and it said computer, A printing system provided with a means of communication for receiving said printing directions information and a print data generation means which will generate print data of a printing object if said printing directions information is received is provided.

[0006]The user can perform printing directions from a printer concerning this printing system. If it detects that a printer received printing directions, a computer will generate print data of a printing object and will perform printing.

[0007]When a computer equips a display screen of a connected image display device with a means on which two or more sub screens are displayed hierarchical, Said print data generation means shall choose either of the documents currently processed in the whole display screen, a sub screen of a front surface, and a sub screen of a front surface as a printing object, and this selection shall be due to a user's directions.

[0008]

[Embodiment of the Invention]An embodiment of the invention is described in detail with reference to drawings.

[0009]Drawing 1 is a block diagram for explaining the outline of the hardware constitutions of a printing system in which this invention is applied. As shown in this figure, a printing system is provided with the computer 10 for realizing the various processing by application, the printing job by a printer driver, etc., and the printer 30 connected to this computer 10, and is constituted. However, the composition of a printing system is not restricted to this.

[0010]The computer 10, The various data for controlling RAM(Random Access Memory) 12 which memorizes temporarily CPU(Central ProcessingUnit) 11 which executes various programs, data, a program, etc., and the computer 10, Various programs etc. possess ROM (Read Only Memory) 13 memorized beforehand in un-volatilizing, and the interface 14 which manages transmission and reception of data with the connected peripheral equipment of printer 30 grade. CPU11 executes the program etc. which were read into RAM12 and the computer 10 functions as a print control unit by performing predetermined processing. The media reader 23 and built-in which read data in recording media, such as the input devices 22, such as the displays 21, such as a color display, a mouse, and a keyboard, and CD-ROM, or the external auxiliary storage unit 24 is connected to the computer 10. Of course, the composition of the computer 10 is not restricted to this.

[0011]The printer 30 is a color printer of an inkjet method, for example. However, it is not restricted to this. For example, it may be a page printer of a laser method. The printer 30 prints based on the print data sent from the computer 10.

[0012]Various data for the printer 30 to control RAM33 which memorizes temporarily the interface 31 which manages transmission and reception of data with the computer 10, CPU32 which execute various programs, print data, etc., and the printer 30, ROM34 various programs etc. are remembered to be beforehand in un-volatilizing, the print head which carries out the regurgitation of the ink, It has the manual operation button 36 for receiving printing directions etc., and comprises printer engine which consists of the carriage drive mechanism which drives the carriage which carries the print head, a paper handling mechanism, a feeding-and-discarding paper mechanism in which feeding-and-discarding paper processing of print media is performed, etc., and a user. Of course, the composition of the printer 30 is not restricted to this.

[0013]Drawing 2 is a figure for explaining an example in the state where the printer 30 was seen from the upper part.

[0014]The printer 30 is provided with the case 40 as shown in this figure. The opening 44 is formed in this case 40, and the inside of the printer 30 can be faced it now from this opening 44. This opening 44 is attached to the wrap covering 46 by the printer 30. This covering 46 is supported by the case 40 with the opening-and-closing supporter 48, enabling free opening and closing. Usually, when this covering 46 is closed so that the opening 44 may be covered when not using this printer 30, and using the printer 30, the covering 46 is opened as shown in drawing 2.

[0015]The power button 53 for turning the power supply of the printer 30 on and off and the print button 54 for performing printing directions to the computer 10 from the printer 30 are formed in the front face of the case 40.

[0016]The guide rail 41 and the carriage 42 which moves this guide rail 41 top to a scanning direction are established in the inside of the printer 30. Movement of this carriage 42 drives the carriage motor which is not illustrated, and is performed by transmitting this driving force to the carriage 42 via a timing belt.

[0017]The carriage 42 is equipped with the black ink cartridge 51 and the ink cartridge 52 in color which were filled up with ink as an image forming medium. The black print head corresponding to this black ink cartridge 51 is provided in the lower position of the black ink cartridge 51. The print head of the color corresponding to the ink cartridge 52 of this color is provided in the lower position of the ink cartridge 52 in color. The ink of three colors of cyanogen, magenta, and yellow is individually filled up with this embodiment into the ink cartridge 52 of this color.

[0018]Next, the functional constitution realized by the computer 10 and the printer 30 with the

above-mentioned printing system is explained with reference to the block diagram of drawing 3.

[0019]As shown in this figure, on the computer 10, the operating system drawing interface 100, the application 110, the printer driver 120, and the display driver 130 are built. These function parts are built on the computer 10, when CPU11 executes the program which RAM12 read. A program for this can be circulated by recording on a portability [, such as CD-ROM,] type recording medium, for example. And a program is installable in the computer 10 by reading this recording medium with the media reader 23. For example, it is also installable via computer networks, such as the Internet.

[0020]The operating system drawing interface 100 is an interface about a screen display and printing in the base software for controlling the computer 10. The operating system drawing interface 100, If the predetermined operation for printing directions, for example, the input of the combination of a specific key, is received from the input device 22, it has the function to send the drawing data for printing the whole screen currently displayed on the display 21, or an active window to the printer driver 120. In this embodiment, this function can be called now also from the printer driver 120. here -- drawing data -- oh, it comprises a drawing instruction of the figure defined by the specification of the rudder operating system, a drawing instruction of a character string, etc.

[0021]The application 110 is a program for making the computer 10 perform predetermined processing of graphics operation, a word processor, etc., for example. The application 110 is provided with the function which transmits the drawing data of the document under processing to the printer driver 120 via the operating system drawing interface 100, for example, if a printing instruction is received from a user. In this embodiment, this function can be called now also from the printer driver 120.

[0022]The printer driver 120 is a program for making the computer 10 perform processing etc. which are changed and outputted to the print data which receive drawing data and control the printer 30. The printer driver 120 is provided with the printing data production part 121, the controller part 122, and the user interface part 123, and is constituted.

[0023]The printing data production part 121 receives drawing data from the operating system drawing interface 100, and performs processing which generates and outputs the print data which control the printer 30 based on this drawing data. Specifically, the received drawing data is first changed into raster data. And after performing a color conversion process and intermediate color processing to raster data, it changes into print data and outputs to the printer 30.

[0024]The controller part 122 performs transmission and reception of the controller part 302 of the operating system drawing interface 100 and the printer 30, and the command for printing controlling. Generally, communication of the bidirectional information that the protocol of the

IEEE 1284.4 grade was used is possible for the printer driver 120 and the printer 30. In this embodiment, the controller part 122 supervises periodically the printing directions from the controller part 302 of the printer 30. And detection of printing directions will require transmission of drawing data from the operating system drawing interface 100.

[0025]If predetermined operation, for example, selection of a menu item, is received from a user, the user interface part 123 will display a printer printing demand set menu as shown in drawing 4 on the display 21, and a user's selection will be urged to it. A printer printing demand set menu is a menu for defining a printing object when performing printing directions from the printer 30. In this figure, it is selectable with a printer printing demand set menu in the four modes, "the printer printing demand OFF", a "printer printing demand hard copy", a "printer printing demand window", and a "printer printing demand document."

[0026]"The printer printing demand OFF" is the mode in which printing is not performed even if the print button 54 of the printer 30 is pushed. A "printer printing demand hard copy" is the mode in which the hard copy of the whole screen currently displayed on the display 21 is printed with the printer 30, when the print button 54 is pushed. A "printer printing demand window" is the mode in which the hard copy of the active window of the display 21 is printed with the printer 30, when the print button 54 is pushed. A "printer printing demand document" is the mode in which the document under processing is printed with the printer 30 with the application 110.

[0027]The user interface part 123 memorizes the mode selected with the printer printing demand set menu.

[0028]The user interface part 123 will display the printer printing demand simple setting screen 520 as shown in drawing 5 on the display 21, if the print button 54 of the printer 30 is notified that it was pushed 3 seconds or more via the controller part 122, for example beyond as for predetermined time. This screen 520 is a screen for being finished about printing performed by pushing the print button 54, and demanding setting out of condition from a user. The user can perform fundamental setting out of printing of a paper kind, a paper size, etc. on this screen 520. This screen 520 simplifies the item which can be set up compared with the print setting screen usually displayed, and he is trying to display a necessary minimum setting-out item. Thereby, the user can perform the printing job of this embodiment by simple operation.

[0029]The display driver 130 is a program for making the computer 10 perform processing etc. which are changed and outputted to the data for a display which receives drawing data and controls the display 21.

[0030]In drawing 3, the print-data reception part 301, the controller part 302, the printer engine control section 303, and the user interface part 304 are built on the printer 30.

[0031]The print-data reception part 301 is an interface for receiving the print data which the printer driver 120 generated.

[0032]The controller part 302 performs the controller part 122 and two-way communication of the printer driver 120. In this embodiment, the controller part 302 receives the information on which the print button 54 was pushed from the user interface part 304, and transmits the information about a notice and the pushed time of the purport that the print button 54 was pushed to the controller part 122 of the printer driver 120.

[0033]The printer engine control section 303 interprets the print data which the print-data reception part 301 received, controls the printer engine 35, and performs printing.

[0034]The user interface part 304 is an interface for sending the information on which the print button 54 was pushed to the controller part 302.

[0035]Next, operation of the printing system in this embodiment is explained with reference to the flow chart of drawing 6.

[0036]It is the printer printing demand set menu which the user showed to drawing 4 in this embodiment, Mode setting about a printer printing demand shall be performed, and one mode of a "printer printing demand hard copy", a "printer printing demand window", and a "printer printing demand document" shall be chosen.

[0037]The controller part 122 of the printer driver 120 supervises the state of the printer 30 (S101), and waits for the printing directions based on the depression of the print button 54 from [from the controller part 302 of the printer 30] a user (S102).

[0038]When printing directions are detected, the information from the controller part 302 of the printer 30 is investigated, and it is judged whether the time of the depression a user's print button 54 was the more than time set beforehand, for example, 3 seconds, (S103). And when it is more than the time which the time of the depression of the print button 54 set beforehand, the printer printing demand simple setting screen 520 as shown in drawing 5 is displayed on the display 21, and a user's printing establishment is urged.

[0039]When it is not more than the time which the time of the depression of the print button 54 set beforehand, And the controller part 122 of the printer driver 120 after receiving printing establishment from a user on the printer printing demand simple setting screen 520 displayed by the processing S104, The mode set as the user interface part 123 with the printer printing demand set menu is asked (S105).

[0040]And according to the set-up mode, the Request to Send of drawing data is performed to the operating system drawing interface 100 (S106). That is, when the mode is a "printer printing demand hard copy", the controller part 122 of the printer driver 120 calls the transmitting function of the drawing data of the whole screen currently displayed on the display 21 with which the operating system drawing interface 100 is provided.

[0041]When the mode is a "printer printing demand window", the controller part 122 of the printer driver 120 calls the transmitting function of the drawing data of the active window with which the operating system drawing interface 100 is provided.

[0042]When the mode is a "printer printing demand document", the controller part 122 of the printer driver 120 calls the printing job function of the document under processing with which the application 110 is provided via the operating system drawing interface 100.

[0043]By calling these functions, the operating system drawing interface 100 or the application 110 performs processing which transmits the drawing data concerning directions to the printer driver 120.

[0044]And when printing establishment is received from a user by the processing S104, the printing data production part 121. Default setting out when printing establishment is not being received with reference to the printing conditions set up on the printer printing demand simple setting screen 520, Or with reference to the same printing conditions as the time of the last printing, the print data based on the drawing data received from the operating system drawing interface 100 are generated, and it outputs to the printer 30 (S107).

[0045]The print-data reception part 301 of the printer 30 receives these print data, and the printer engine control section 303 interprets print data, controls the printer engine 35, and performs printing.

[0046]
[Effect of the Invention]As mentioned above, according to this invention, the printing system which can perform printing directions from a printer is provided.
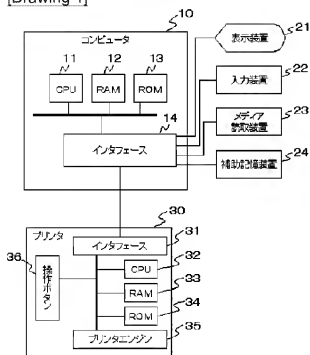
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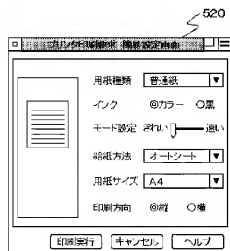DRAWINGS

[Drawing 1]
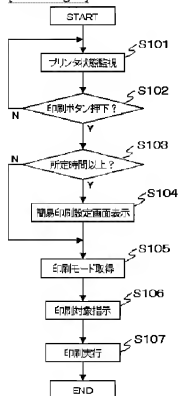

[Drawing 2]

主走査方向

[Drawing 3]

[Drawing 4]

プリンタ印刷設定メニュー

| プリンタ印刷要求　OFF |
| プリンタ印刷要求　ＯＮ 設定 |
| プリンタ印刷要求　ウインドウ |
| プリンタ印刷要求　ドキュメント |

[Drawing 5]

520

プリンタ印刷設定　簡易設定画面

用紙種類	普通紙 ▼
インク	◉カラー ○黒
モード設定	きれい ——— 速い
給紙方法	オートシート ▼
用紙サイズ	A4 ▼
印刷方向	◉縦 ○横

[印刷実行] [キャンセル] [ヘルプ]

[Drawing 6]

START

S101
プリンタ状態監視

S102
印刷ボタン押下？　N

S103
所定時間以上？　N

S104
簡易印刷設定画面表示

S105
印刷モード取得

S106
印刷対象指示

S107
印刷実行

END

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is a block diagram for explaining the outline of the hardware constitutions of a
printing system in which ** and this invention are applied.
[Drawing 2]It is a figure for explaining an example in the state where ** and the printer 30 were
seen from the upper part.
[Drawing 3]It is a block diagram for explaining the functional constitution of **, the computer 10,
and the printer 30.
[Drawing 4]It is a figure for explaining an example of ** and a printer printing demand set
menu.
[Drawing 5]It is a figure for explaining an example of ** and the printer printing demand simple
setting screen 520.
[Drawing 6]It is a flow chart for explaining processing of ** and this embodiment.
[Description of Notations]
10 -- Computer
11 -- CPU
12 -- RAM
13 -- ROM
14 -- Interface
21 -- Display
22 -- Input device
23 -- Media reader
24 -- Auxiliary storage unit
30 -- Printer
31 -- Interface
32 -- CPU

33 -- RAM
34 -- ROM
35 -- Printer engine
36 -- Manual operation button
40 -- Case
41 -- Guide rail
42 -- Carriage
44 -- Opening
46 -- Covering
51 -- Black ink cartridge
52 -- Color ink cartridge
53 -- Power button
54 -- Print button
100 -- Operating system drawing interface
110 -- Application
120 -- Printer driver
121 -- Printing data production part
122 -- Controller part
123 -- User interface part
301 -- Print-data reception part
302 -- Controller part
303 -- Printer engine control section
304 -- User interface part

[Translation done.]